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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/812,655	03/19/2001	Stephen C. Schulz	35013.5100	2511

7590 06/16/2004

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EXAMINER

NGUYEN, GEORGE BINH MINH

ART UNIT	PAPER NUMBER
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3723

DATE MAILED: 06/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/812,655

Applicant(s)

SCHULZ ET AL.

Examiner

George Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-14 and 19-30 is/are pending in the application.
- 4a) Of the above claim(s) 6,8-14,20,24,26,28 and 29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5,7,19,21-23,25,27 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- 1) ☐ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Receipt is acknowledged of Applicant's amendment filed on March 03, 2004.

Claims 1-4 and 15-18 were canceled. Claims 6, 8-14, 20, 24, 26, and 28-29 were withdrawn from further consideration. Claims 5, 7, 19, and 21-23, 25, 27, and 30 are presented for examination.

This action is not final due to a new ground of rejection as follows. The examiner regrets any inconveniences.

Allowable Subject Matter

1. The indicated allowability of claims 5, 7, 19, and 21-30 is withdrawn in view of the newly discovered reference(s) to Adams et al.'6,500,055. Rejections based on the newly cited reference(s) follow.

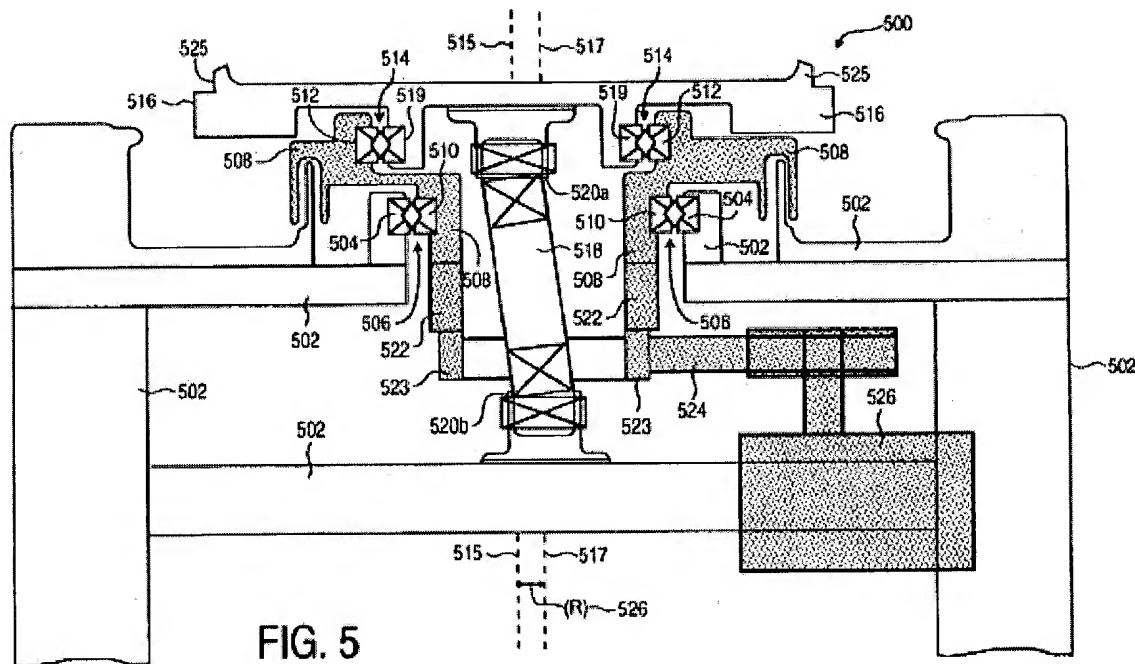
Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 5, 7, 19, 21-23, 25, 27, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Breivogel et al.'5,554,064 in view of Rhoades'5,187,899.

With reference to Fig. 5, col. 4, line 13 to col. 5, line 32, Breivogel discloses the claimed invention except for the offset of 0.05 – 2.00 mm (claims 5, 7, and 23) and orbit speed in the range of 2,000-10,000 rpm (claim 21).



Please note that first bearing is Ref. No. 514; second bearing is Ref. No. 506; Orbit offset is Ref. No. 526 to be approximately 0.75 inches (18.75 mm). The orbit rate is between 140-220 orbits/min to provide good polish uniformity and wafer throughput.

With reference to col. 1, line 55 to col. 5, line 15, Rhoades teaches that it is known to have utilized high frequency/low amplitude vibrational polishing in combination with a slurry to obtain a high surface finish polish without the loss of resolution or detail.

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sert, i.e. pad, which reasonably matches the surface to be polished.

Ultrasonic machining and polishing are well known machining processes whereby the surface of a workpiece is abraded by a grit contained in a slurry circulated between the workpiece surface and a vibrating tool adjacent thereto, with the tool typically vibrating at frequencies above the audible range, i.e. usually within the range of 19,500 to 20,500 cycles per second. The amplitude of vibration is normally less than 0.1 mm (0.004 inch), and typically within the range 0.01 to 0.05 mm (0.0004 to 0.002 inch). Normally, the frequency and amplitude are inversely proportional so that the higher the frequency, the lower the amplitude.

In conventional ultrasonic machining, the abrading tool face is provided with a three-dimensional form, so

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized high frequency/low amplitude vibrational polishing as taught by Rhoades, since Rhoades states at col. 3, lines 55-61 that such a modification would obtain a high surface polish without the loss of resolution or detail. Regarding to the range of amplitude and high frequency set forth in the claims, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized such range, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In the specification, page 8, lines 1-13, the applicant has not demonstrated the criticality of the ranges.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

5. Claims 5, 7, 19, 21-23, 25, 27, and 30 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,500,055 in view of Rhoades'5,187,899. U.S. Patent '005 discloses the claimed invention except for the offset of 0.05 – 2.00 mm (claims 5, 7, and 23) and orbit speed in the range of 2,000-10,000 rpm (claim 21).

With reference to col. 1, line 55 to col. 5, line 15, Rhoades teaches that it is known to have utilized high frequency/low amplitude vibrational polishing in combination with a slurry to obtain a high surface finish polish without the loss of resolution or detail.

sert, i.e. pad, which reasonably matches the surface to be polished.

Ultrasonic machining and polishing are well known 55 machining processes whereby the surface of a workpiece is abraded by a grit contained in a slurry circulated between the workpiece surface and a vibrating tool adjacent thereto, with the tool typically vibrating at frequencies above the audible range, i.e. usually 60 within the range of 19,500 to 20,500 cycles per second. The amplitude of vibration is normally less than 0.1 mm (0.004 inch), and typically within the range 0.01 to 0.05 mm (0.0004 to 0.002 inch). Normally, the frequency and amplitude are inversely proportional so that the 65 higher the frequency, the lower the amplitude.

In conventional ultrasonic machining, the abrading tool face is provided with a three-dimensional form, so

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized high frequency/low amplitude vibrational polishing

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as taught by Rhoades, since Rhoades states at col. 3, lines 55-61 that such a modification would obtain a high surface polish without the loss of resolution or detail. Regarding to the range of amplitude and high frequency set forth in the claims, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized such range, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In the specification, page 8, lines 1-13, the applicant has not demonstrated the criticality of the ranges.

Response to Arguments

6. Applicant's arguments with respect to claims 5, 7, 19, 21-23, 25, 27, and 30 have been considered but are moot in view of the new ground(s) of rejection.

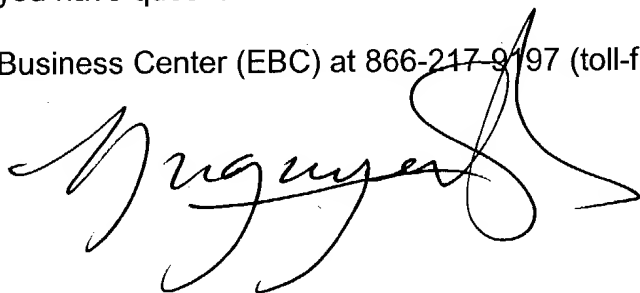
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George Nguyen whose telephone number is 703-308-0163. The examiner can normally be reached on Monday-Friday/630AM-300PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hail can be reached on 703-308-2687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Nguyen', with a large, stylized flourish extending from the end.

George Nguyen
Primary Examiner
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GN – May 28, 2004

GEORGE NGUYEN
PRIMARY EXAMINER